

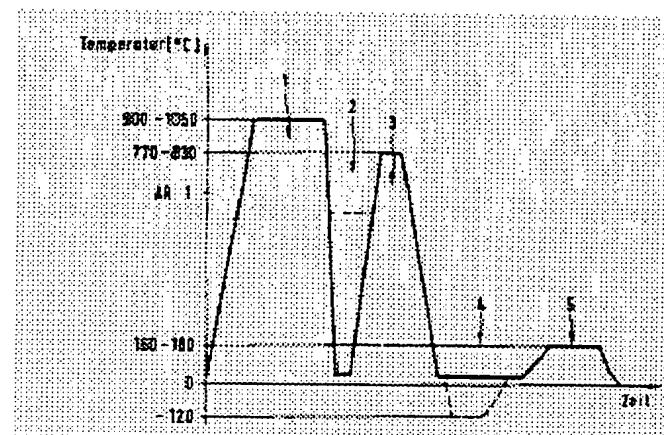
Thermochemical-thermal treatment of case hardening steels - with deep cooling between hardening and tempering

Patent number: DE4204982
Publication date: 1993-08-26
Inventor: HACKER EMIL (DE)
Applicant: HOECHSTADTER MASCHINENFABRIK S (DE)
Classification:
- **international:** C21D1/18; C21D1/78; C21D6/04; C23C8/22; C23C8/32; C21D1/18; C21D1/78; C21D6/04; C23C8/06; C23C8/08; (IPC1-7): C21D1/18; C23C8/22; C23C8/32
- **europen:** C21D1/18; C21D1/78; C21D6/04; C23C8/22; C23C8/32
Application number: DE19924204982 19920219
Priority number(s): DE19924204982 19920219

Report a data error here

Abstract of DE4204982

Thermochemical-thermal treatment of case hardening steels comprise the following steps. Case hardening or carbo-nitriding (1) takes place at 900 to 1950 deg.C. This is followed by quenching (2) down to a temp. below the Ar₁ point at a rate chosen to avoid cementite precipitation at grain boundaries. The subsequent hardening process (3) involves heating at a rate from 20 to 80 deg.C/min and holding at 770 to 830 deg.C for 5 to 15 min. The treatment is concluded by tempering (5). Deep cooling (5) down to -70 to 120 deg.C is foreseen between the hardening (4) and tempering (6) processes. The structure in the boundary zone has finely dispersed inter-crystalline carbide precipitations, with an area greater than 8 per cent of the total and a grain size finer than 10 according to ASTM E112. USE/ADVANTAGE - For mfr. of components of internal combustion engines. Improves the wear resistance of severely loaded components also



under unfavourable lubricating conditions.

Data supplied from the **esp@cenet** database - Worldwide